

What is claimed is:

1. A method of manufacturing a semiconductor device comprising:
providing a substrate having an insulating layer and a single crystal silicon layer
5 formed on the insulating layer;
forming a strain-inducing semiconductor layer on the single crystal silicon layer,
the strain-inducing semiconductor having the lattice constant differing from the lattice
constant of the single crystal silicon layer;
changing the single crystal silicon layer into a strained silicon layer by matching
10 a lattice of the single crystal silicon layer with a lattice of the strain-inducing
semiconductor layer; and
removing the strain-inducing semiconductor layer.
2. The method of manufacturing a semiconductor device as defined in claim 1,
15 wherein the step of forming the strained silicon layer is performed by providing
an annealing process.
3. The method of manufacturing a semiconductor device as defined in claim 1,
wherein when a single crystal silicon layer is formed on the strain-inducing
20 semiconductor layer, the single crystal silicon layer on the strain-inducing
semiconductor layer has a thickness which causes no defect.
4. The method of manufacturing a semiconductor device as defined in claim 1,
wherein a layer including germanium is formed as the strain-inducing
25 semiconductor layer.
5. The method of manufacturing a semiconductor device as defined in claim 1,

wherein the strain-inducing semiconductor layer is removed by wet etching using mixed acid of hydrofluoric acid and nitric acid.

6. The method of manufacturing a semiconductor device as defined in claim 1,

5 wherein the step of forming the strain-inducing semiconductor layer is performed by using a metal organic chemical vapor deposition method, a molecular beam epitaxy method, or a ultra high vacuum chemical vapor deposition method.

7. The method of manufacturing a semiconductor device as defined in claim 2,

10 wherein the annealing process is performed through a temperature increase process, a constant temperature process, and a temperature decrease process.

8. A semiconductor device comprising:

15 a semiconductor substrate manufactured by the method of manufacturing a semiconductor device as defined in claim 1.

9. A semiconductor device comprising:

a semiconductor substrate which includes an insulating layer and a strained silicon layer formed on the insulating layer; and

20 a field effect transistor formed on the semiconductor substrate.